Next-Generation Wireless Network Provides Access Throughout Campus

Bowdoin College moves to advanced Cisco network to support bring-your-own-device and enhance student learning.

EXECUTIVE SUMMARY

Customer Name: Bowdoin College

Industry: Higher education

Location: Portland, Maine

Number of Users: 3,000 mobile device users and growing

BUSINESS CHALLENGE

- Address need for comprehensive, reliable, indoor and outdoor wireless network throughout campus
- Support anytime, anywhere teaching and learning via popular devices such as iPads and iPhones
- Decrease coverage interruptions and minimize IT management overhead

NETWORK SOLUTION

- High-performance Cisco Unified Access solution with integrated mobility, management, and self-healing intelligence

BUSINESS RESULTS

- Delivered high-performance 802.11n wireless network to increase student and faculty collaboration
- Supported ongoing bring-your-own-device trend and must-have need for wireless connectivity
- Easily managed and scaled wireless network for users campuswide

Business Challenge

Founded in 1794, Bowdoin College is a highly selective college of approximately 1,730 students from across America and around the world. With 33 academic departments, advanced interdisciplinary programs, and a flexible curriculum, a Bowdoin education is a highly personalized experience.

Although delivering a tailored experience is essential, another key prerequisite for students in selecting Bowdoin is the level of technology that the campus affords, with high-performance, ubiquitous wireless Internet access topping the list. Students and faculty are increasingly requesting access to wireless networks on a wide array of personal mobile devices, transforming the “bring your own device” (BYOD) trend from an emerging phenomenon to the norm.

“A large portion of our population brought their own personal devices even before BYOD became a popular term,” says Mitch Davis, Chief Information Officer for Bowdoin College. “To enable anytime, anywhere learning, wireless access on any device is a crucial business requirement at Bowdoin.”

In 2004, Davis and his team implemented an end-to-end Cisco® Unified Access solution to support growing need for wireless connectivity. Several hundred users were on campus at the time, and wireless access was concentrated in hot spots such as common areas, where students and faculty gathered most. But as demand for wireless began climbing into the thousands of users and personal devices continued to proliferate, Bowdoin saw the need to deliver a more comprehensive, high-capacity, indoor and outdoor wireless network that would enable access from anywhere throughout campus.

Supplying updated wireless access across the 95-building environment meant not only expanding campus coverage, but also supporting a variety of devices, improving dependability by mitigating sources of interference, and scaling to meet escalating demand. At the same time, the College needed to manage the wireless network without costly manual troubleshooting and network management.

Network Solution

To advance to a next-generation wireless implementation, Bowdoin again turned to Cisco. According to Jason Lavoie, network manager for Bowdoin, the initial Unified Access solution was reliable, easy to manage, and delivered exceptional value by meeting the college's needs for eight years. Davis adds that Cisco has delivered consistently as a trusted, innovative partner.

In 2012, using Cisco wireless access points, controllers, and management tools, the technology staff upgraded to a borderless network that allows the university to connect anyone (student, faculty, or guest) to any device or service, virtually anywhere on or nearby campus, at any time. Bowdoin can provide this connectivity securely, reliably, and with excellent performance and manageability. Key to these capabilities is Bowdoin's core network, primarily built on Cisco Catalyst® 6500 Series switches with Cisco Wireless Services Module (WiSM) controllers.

Faster Performance, Greater Capacity, Secure Access: All With Streamlined Management

To increase performance as well as capacity, Bowdoin adopted Cisco Aironet® 3600 Series Access Points, which deliver up to three times more coverage and high data rates to assist when thousands of tablets, smartphones, and high-performance laptops are requesting network access. Cisco Prime Network Control System (NCS) and Cisco Identity Services Engine (ISE) support the Cisco Aironet 3600 Series Access Points, creating unique strengths in addressing the BYOD challenge. Unified policy and access control starts with Cisco ISE, currently used to authenticate campus guests and grant them temporary wireless access. As a result, the team can help ensure that the college's networks remain secure from inappropriate and unauthorized access, which enables an enhanced teaching experience for faculty and a more robust learning experience for students.

> "Now, students and faculty can collaborate with ease, working anywhere anytime on campus, without even thinking about wireless connectivity, because it's there, transparently, wherever they need it."
> **— Mitch Davis, Chief Information Officer, Bowdoin College**

Additionally, the converged wired/wireless management in Cisco Prime NCS simplifies and helps secure the mobile experience at Bowdoin. According to Lavoie, NCS also provides speed improvements so he can quickly run reports and obtain visibility into the college's growing wireless network.

The BYOD sprawl at Bowdoin has been tamed further using a smart strategy: through bulk purchasing agreements, college IT can provide discounts to students and faculty for a specific set of computers and devices. The majority of the campus population opts for Apple systems, and the largely uniform environment allows college IT staff to provide comprehensive help-desk support for Mac laptops, as well as iPads and iPhones as a value-add for students and faculty.

Automatic Detection and Mitigation

Management is further streamlined through detection and management technologies from Cisco. ISE provides a higher level of visibility through innovative device profiling, such that the IT team can easily identify any device on the network, from computers and printers to mobile phones and other wireless devices, and can control access to Bowdoin's wireless network tailored to device and user needs.

The Mobility Services Engine (MSE) tracks assets and devices and helps automate debugging. MSE equips IT with historical information to stay informed if users repeatedly report issues when using certain devices in specific locations.

Through Cisco CleanAir™ technology, the IT team can automatically detect and mitigate RF interference to help protect performance, increase reliability, and deliver unprecedented RF spectrum troubleshooting, resulting in a high-quality, highly secure experience. The College can detect sources of RF interference such as game consoles, WiFi-enabled projectors, and cordless phones in residence halls. By creating a log of issues, IT is equipped with historical information when users call for help, resulting in fewer issues diagnosing problems.

PRODUCT LIST

Cisco Unified Access wireless solution

- Cisco Aironet 3600 Access Points with CleanAir technology

Routing and Switching

- Cisco Catalyst 6500 Series Switches
- Cisco Catalyst 4500 Series Switches
- Cisco Catalyst 3750 Series Switches

Network Management

- Cisco 5508 Wireless Controllers
- Cisco Mobility Services Engine
- Cisco Identity Services Engine
- Cisco Prime Network Control System (NCS)
- Cisco Wireless Service Module 2 (WiSM2)

Business Results

Wireless Enhances Teaching and Learning Innovation

At Bowdoin, wireless access is now available anywhere that students and faculty want to be (in hallways, remote corners of the library, or the crowded student union building), promoting increased productivity and a richer learning experience. The campus provides a high-performance 802.11n wireless network in all interior areas, many where coverage did not exist previously. Students and faculty have ready access to online or cloud-based applications required for teaching and learning, with capacity to spare. Even in packed classrooms, faculty and students can use iPads over the wireless network to ask questions, increasing interactivity and providing an engaging learning environment.

“Now, students and faculty can collaborate with ease, working anywhere anytime on campus, without even thinking about connectivity, because it’s there, transparently, wherever they need it,” says Davis. “The new Cisco Unified Access solution provides support for high-density areas. So even if a professor tells students ‘let’s all stream this video now,’ we know the network can handle it.”

Broader, more robust wireless access has enabled innovation in several areas. Students even use the wireless network to compete in the intercollegiate sport, RoboCup, in which students use miniature robots and communicate via the wireless network to control robot play during soccer games.

Streamlined IT Management

With Cisco tools, the IT team is more efficient and spends less time manually troubleshooting, allowing them to more easily scale the network without incurring substantial overhead. NCS and ISE help address support for multiple devices on the network, including guest access management, while tools such as CleanAir deliver greater visibility into sources of RF interference, reducing the time spent manually troubleshooting issues and improving network reliability. “CleanAir and other innovative Cisco management technologies provide so many benefits. We spend a lot less time traveling around campus diagnosing problems,” says Lavoie.

BYOD, a Friend of IT

For Bowdoin, mounting expectations of fast network performance, smooth access to cloud services, consistent connectivity and high-quality experiences on any wireless device, all coupled with the growing number of mobile devices, have placed huge demands on the campus wireless network infrastructure. For IT supporting the BYOD and technology revolution at Bowdoin, burdens are eased through intelligent, easily managed mobile networking solutions from Cisco. And the benefits are equally evident for teachers and learners.

Says Davis, “Now, students and faculty can collaborate with ease, working anywhere anytime on campus, without even thinking about wireless connectivity, because it’s there, transparently, wherever they need it.”

For More Information

To find out more about the Cisco Identity Services Engine, go to:
http://www.cisco.com/en/US/products/ps11640/index.html.

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